

**APAF - Qiagen* ARC Linkage Project (LP0455692)****"Deep-Drilling of the Human Plasma Proteome"**

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Plasma is a biomarker discovery opportunity because it is easily available and because it comprehensively and regularly samples the human condition and in all states of health and/or disease. Drilling deeply into the human plasma/serum proteome with state-of-the-art technologies holds enormous promise in developing new markers for disease prognosis, diagnosis, response to therapy monitoring and stratification of patients - if some critical technical challenges are overcome.

Unfortunately, like many protein-rich biofluids (saliva, tears, urine, skin, hair, etc) plasma has an extraordinary protein concentration range. There is a 10¹² difference between the concentration of the most abundant (albumin; ~60mg/mL) and rare abundance proteins. The top 20 proteins occupy the vast major of discovery space. While estimates vary, there is consensus that the 400-500 proteins reported in plasma to date are but the tip of the iceberg and that great discovery opportunities exist if we can "drill far more deeply into the human plasma proteome". Without removal of these abundant proteins visualization of the low abundance (i.e., rare) proteins is just not feasible.

The aim of this project is to investigate a novel cyclic immunodepletion technique for the removal of the high abundant proteins for human plasma using IgY antibodies. If successful this will enable the extension of the utility of current proteomic technologies to low abundant protein markers present in plasma and subsequent opportunities for research and development of new biomarkers. If successful the researchers believe the outcome could lead to a renaissance in the discovery, evaluation and deployment of novel clinical diagnostics and further enhance Australia's reputation for research excellence in Proteomics.

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EXHIBIT A